Example 1

To lower BP, nitroprusside in dextrose 5% in water is to be titrated 15-200 mcg per minute. The IV solution was prepared by adding 50 mg of nitroprusside to dextrose 5% in water. The final solution contains a total volume of 250 ml. You should infuse the IV solution at a rate of ___ to ___ ml per hour.

To find the ml/hour:

Step 1 – Write down dosage rate
Step 2 – Write down IV concentration
Step 3 – Convert if needed
Step 4 – Reduce the units
Step 5 – Perform the math
Solution to Example One

Calculating IV Titration in ml/hr

Example 1: To lower BP, nitroprusside in dextrose 5% in water is to be titrated 15-200 mcg per minute. The IV solution was prepared by adding 50 mg of nitroprusside to dextrose 5% in water. The final solution contains a total volume of 250 ml. You should infuse the IV solution at a rate of ___ to ___ ml per hour.

To find the ml/hour:

1. Write down dosage rate
2. Write down IV concentration
3. Convert if needed
4. Reduce the units
5. Perform the math

\[
\begin{align*}
&\text{Step 1} \quad 15 \text{ mcg} \times 250 \text{ ml} = 3,750 \text{ ml} \\
&\text{Step 2} \quad 50 \text{ mg} \times 1000 \text{ mcg} = 50,000 \text{ ml} \\
&\text{Step 3} \quad 60 \text{ min} \times 1 \text{ hr} = 60 \text{ min} \\
&\text{Step 4} \quad 15 \text{ mcg} \times 250 \text{ ml} \times 60 \text{ min} = 225,000 \text{ ml} \\
&\text{Step 5} \quad 1 \text{ mg} \times 1000 \text{ mcg} \times 1 \text{ hr} = 1000 \text{ ml} \\
&\text{Rounded to the nearest whole number. } 5 \text{ ml/hour.}
\end{align*}
\]

To find the highest rate that may be administered:

Repeat the calculation Using the high dosage in Step 1: 200 mcg

\[
\begin{align*}
&\text{Step 1} \quad 200 \text{ mcg} \times 250 \text{ ml} = 50,000 \text{ ml} \\
&\text{Step 2} \quad 50 \text{ mg} \times 1000 \text{ mcg} = 50,000 \text{ ml} \\
&\text{Step 3} \quad 60 \text{ min} \times 1 \text{ hr} = 60 \text{ min} \\
&\text{Step 4} \quad 200 \text{ mcg} \times 250 \text{ ml} \times 60 \text{ min} = 3,000,000 \text{ ml} \\
&\text{Step 5} \quad 1 \text{ mg} \times 1000 \text{ mcg} \times 1 \text{ hr} = 1 \text{ mg} \\
&\text{Rounded to the nearest whole number. } 5 \text{ ml/hour.}
\end{align*}
\]
Example 2

Calculating IV Titration in ml/hr

* Example 2: Levophed in dextrose 5% in water is to be titrated 2–4 mcg per minute to maintain BP. The IV solution was prepared by adding 4 mg of Levophed. The final solution has a total volume of 1000 ml. You should infuse the IV solution at a rate of ___ to ___ ml per hour.

To find the ml/hour:
Step 1 – Write down dosage rate
Step 2 – Write down IV concentration
Step 3 – Convert if needed
Step 4 – Reduce the units
Step 5 – Perform the math
Calculating IV Titration in ml/hr

Example 2: Levophed in dextrose 5% in water is to be titrated 2–4 mcg per minute to maintain BP. The IV solution was prepared by adding 4 mg of Levophed. The final solution has a total volume of 1000 ml. You should infuse the IV solution at a rate of ___ to ___ ml per hr.

To find the ml/hour:
- Step 1: Write down dosage rate
- Step 2: Write down IV concentration
- Step 3: Convert if needed
- Step 4: Reduce the units
- Step 5: Perform the math

\[
\begin{align*}
\text{Step 1} & : 2 \text{ mcg} \\
\text{Step 2} & : 1000 \text{ ml} \\
\text{Step 3} & : 4 \text{ mg} \\
\text{Step 4} & : 1 \text{ min} \\
\text{Step 5} & : 1000 \text{ mcg} \\
& : 1 \text{ hr} \\
& : 60 \text{ min} \\
\end{align*}
\]

\[
1 \times 4 \times 1000 \times 1 \times 60 \text{ ml} = 240,000 \text{ ml} \text{ hr}
\]

To find the highest rate that may be administered:
- Repeat the calculation
- Using the high dosage in Step 1.

\[
1 \text{ mg} \\
1000 \text{ mcg} \\
60 \text{ min} \\
1 \text{ hr} \\
4 \text{ mg} \\
1000 \text{ mcg} \\
1 \text{ hr} \\
1 \text{ min}
\]

\[
1 \times 4 \times 1000 \times 1 \times 60 \text{ ml} = 240,000 \text{ ml} \text{ hr}
\]

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